PS 630
SIX CHANNEL
REMOTE SPEAKER STATION

USER MANUAL

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This product is designed and manufactured by:
ASL Intercom BV
Zonnebaan 42
3542 EG Utrecht
The Netherlands
Phone: +31 (0)30 2411901
Fax: +31 (0)30 2667373
E-mail: info@asl-inter.com
Web: www.asl-inter.com

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1.0 INTRODUCTION

The PS 630 is a six channel remote speaker station designed for use in an ASL Intercom system. It incorporates a loudspeaker, a gooseneck mic and a headset connector and provides full duplex communications.

The PS 630 RM model has, instead of a gooseneck mic, a built-in electret microphone.

Each channel has a Volume (listen level) control, a TALK and CALL button with LED indicators and a two-stage side tone trimmer.
A master volume knob controls the speaker/headset volume.

The unit is equipped with a limiter for the gooseneck microphone, allowing to speak close into the microphone without giving rise to overload and distortion.
Loudspeaker dimming is automatic if the microphone is active.
If a headset is plugged in, both gooseneck microphone and loudspeaker are disabled automatically.

As an option, an XLR-6 headset connector can be fitted for binaural use of the headset: each channel can be assigned to either the left or the right headset can, or to both headset cans.

The PS 630 has an electronically balanced program audio input for local volume controlled monitoring only. The program audio does not appear on the intercom lines.

Special attention has been paid to the intelligibility of speech. By applying low noise/high speed op-amps, a speech presence filter and proprietary and bridged headphone amplifiers, communication is very comfortable even in environments with high background noise level. There are separate amplifiers for headset and loudspeaker.

The unique ASL CALL system provides both a flashing red LED and a very distinctive sound signal. Only a slight touch of the CALL button makes the red LED flash, whilst holding the button for two seconds activates the Call sound signal. The volume of the sound signal (buzzer) can be adjusted at the front panel.

The pre-amplified microphone signal is electronically balanced available at the ‘Mic Direct Out’ connector at the rear panel.

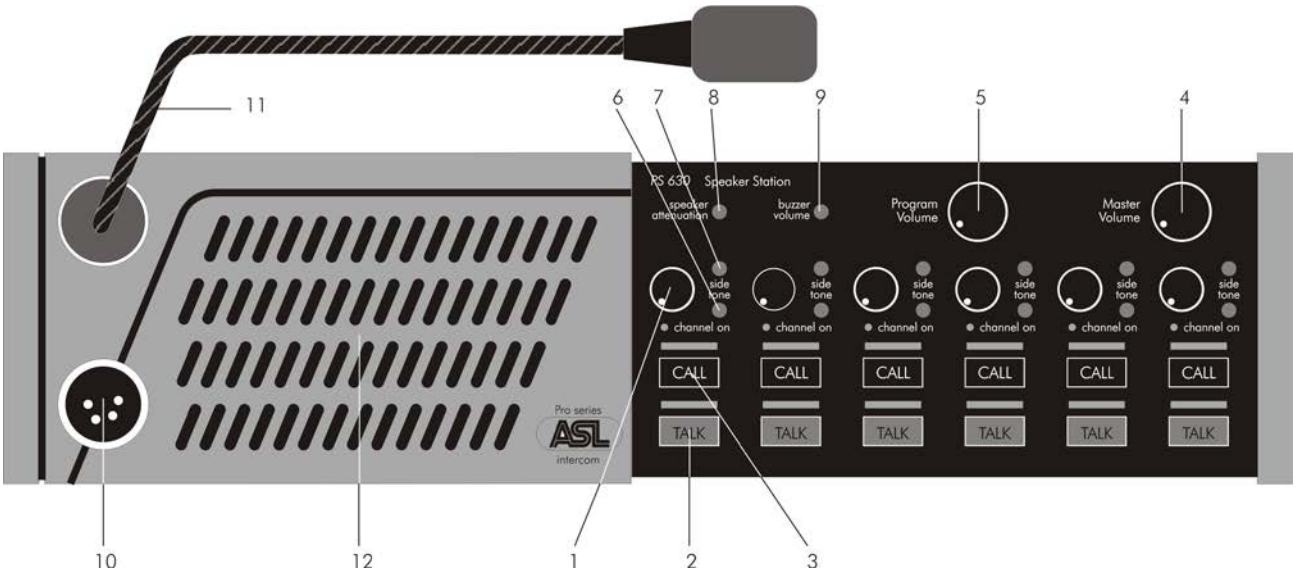
Fully electronic switching increases reliability and allows for 'soft' microphone on switching (latched or momentary), remote Mic Mute facility and automatic speaker attenuation.

2.0 INSTALLATION

To connect the PS 630 to the intercom system, use professional microphone cable with 2 wires and 1 shield only. Connect the intercom cables to the LINE connector sockets at the rear panel.

The PS 630 is fully protected against eventual wiring mistakes (reverse power) or a short circuit in the interconnect cables.
A kit is included for mounting the PS 630 in a 19" rack, taking 2U of rack space.

3.0 FRONT PANEL CONTROLS & CONNECTOR



1 LISTEN LEVEL control knobs
To preset the listen level for each intercom channel. By turning the knob fully counter clockwise, the channel is switched off.
See #17 for receiving a Call signal whilst the channel is switched off

2 TALK buttons
These buttons allow talking to each channel separately or to several channels simultaneously. If a TALK button is activated, its green LED is lit.

Momentary switching:
If a TALK button is pushed and held, the microphone signal is sent to the referring intercom channel until the button is released.

Latched switching:
If a TALK button is pushed shortly, it is electronically latched and the microphone signal is sent to the referring intercom channel. If pushed again, the Talk button switches off.

Mic Mute when latched on:
After on an intercom channel a so-called Mic Mute signal has been received from a PRO Series master station or power supply the connection between microphone and the referring intercom channel is interrupted. By pushing the TALK button, the connection is restored and one can talk to the intercom channel again.

3 CALL buttons
To activate the call system, for each channel separately. By a momentary push a call signal is sent to all stations connected to the referring intercom channel and all Call LEDs start flashing. Pushing and holding the CALL button for 2 seconds activates the call buzzer (if not muted by a Buzzer Mute signal received from a PRO Series master station or separate power supply).

4 MASTER VOLUME knob
This knob is a master volume control of the listen levels of the 6 intercom channels (see also #1), for both the speaker and the headset.

5 PGM VOLUME knob
To adjust the volume of the Program audio, both for the speaker and the headset. Depending on the setting of internal jumpers (see #18), the master volume knob functions as a master control for both PGM and intercom volume.

6 SIDE TONE LEVEL trimmers
With these trimmers (one for each channel) the level of your voice in your own loudspeaker or headset is adjusted.

7 SIDE TONE HI trimmers
With these trimmers (one for each channel) the rejection in the high frequency range is adjusted.

Trimmers #6 and #7 also minimize the speaker feeding back into the gooseneck microphone (unit feedback).

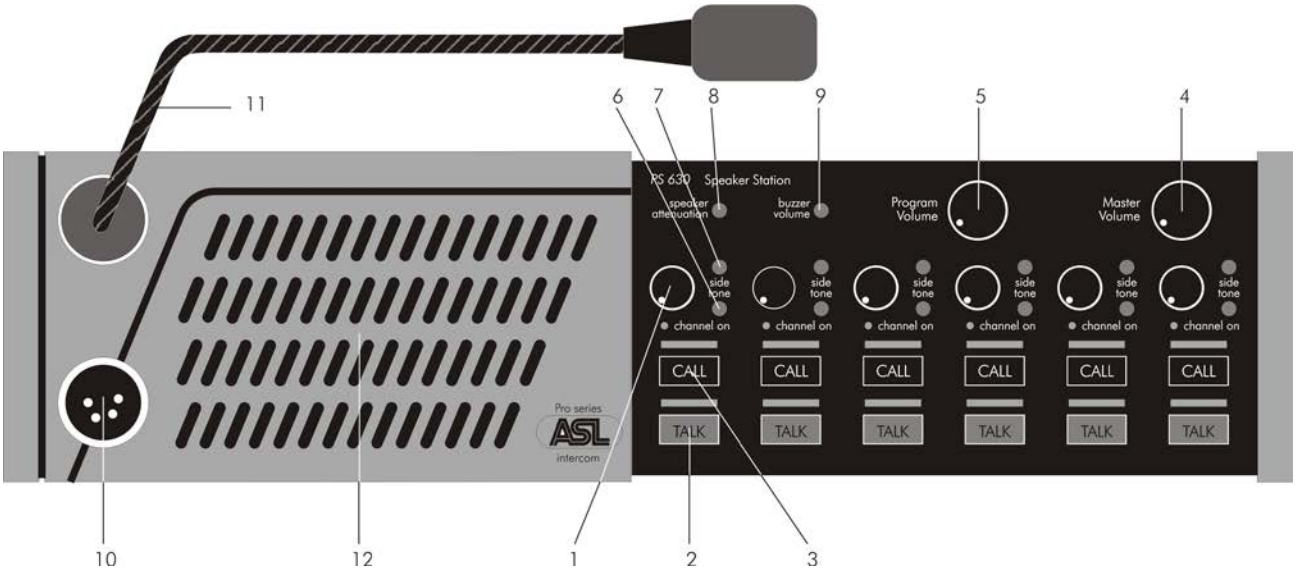
Adjustment procedure for both side tone trimmers, for each channel separately:

- set trimmer in start position : fully clockwise
- switch off the microphones of all connected (speaker-) stations
- Connect a headset to this PS 630
- push the TALK button of the channel of which the side tone is supposed to be adjusted
- turn up the listen volume of the PS 630.
- speak into the headset microphone.
- adjust the listen level (your own voice) by turning the side tone trimmer.

The trimmer operating area is between fully clockwise and minimum level.

For optimum result, repeat the side tone adjustment procedure with trimmers #6 and #7 a few times.

Adjusting side tones does not affect the level of your voice as it is heard by other stations.



8 SPEAKER ATTENUATOR trimmer

With this trimmer one adjusts the extent to which the loudspeaker is automatically dimmed if the gooseneck microphone is switched on. It prevents unit feedback if side tone rejection is not sufficient.
It also minimizes system feedback or a 'hollow' sound when the gooseneck mics of other speaker stations are switched on.

Adjustment procedure :

- switch off the TALK buttons
- inject an audio signal into one of the channels
- turn up the listen volume of the selected channel
- activate the microphone (push the TALK button)
- adjust the degree of attenuation.

9 BUZZER VOLUME trimmer

To adjust the volume of the internal buzzer.
The buzzer is activated if the CALL button of the PS 630 (or a CALL button of any other station on the channels to which the PS 630 is connected) is pushed for longer than 2 seconds.

The buzzer may be muted after a so-called All Buzzer Mute signal has been received from a PRO Series master station or separate power supply.

10 HEADSET connector

An XLR-4 connector for the connection of a headset. The headset must have a can impedance of minimum 200 Ω. If the headset has 2 cans in parallel, each can must have an impedance of minimum 400 Ω. The headset microphone may be of the dynamic or electret type.

Pin assignments :
Pin 1: Shield mic. (GND)
Pin 2: mic. +
Pin 3: phones +
Pin 4: phones -
If a headset is connected, loudspeaker and gooseneck microphone are disabled automatically

The PS 630 may optionally be equipped with a XLR-6 headset connector for binaural use. Jumpers on the internal front PCB (see #16) determine the routing of each channel to the headset cans: either to the left can, or the right can or to both cans or to none of the cans.

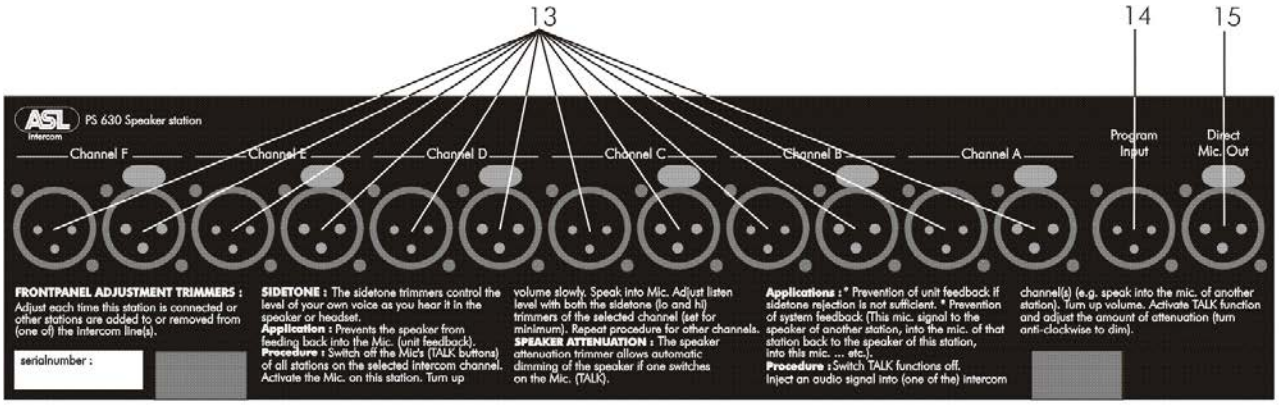
11 GOOSENECK microphone

This is an electret noise cancelling microphone. A limiter prevents the mic pre-amp from clipping when speaking close into the microphone.

12 LOUDSPEAKER

A high quality 16 Ω loudspeaker

4.0 REAR PANEL CONNECTORS

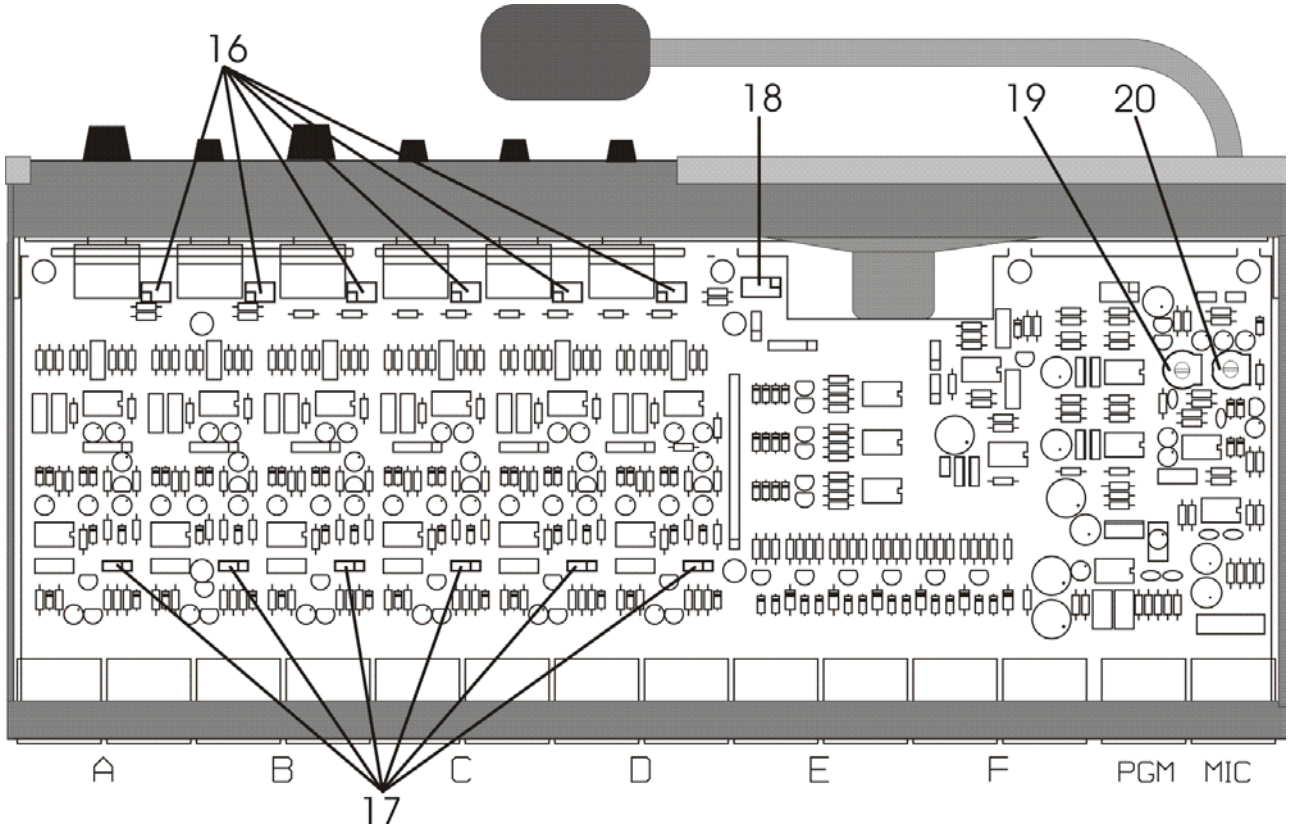

13
14
15
PS 630 Speaker station
Channel F
Channel E
Channel D
Channel C
Channel B
Channel A
Program Input
Direct Mic. Out
FRONTPANEL ADJUSTMENT TRIMMERS : Adjust each time this station is connected or other stations are added to or removed from (one of) the intercom line(s).
serialnumber :
SIDETONE : The sidetone trimmers control the level of your own voice as you hear it in the speaker or headset.
Application : Prevents the speaker from feeding back into the Mic. (unit feedback).
Procedure : Switch off the Mic's (TALK buttons) of all stations on the selected intercom channel. Activate the Mic. on this station. Turn up volume slowly. Speak into Mic. Adjust listen level with both the sidetone (lo and hi) trimmers of the selected channel (set for minimum). Repeat procedure for other channels.
SPEAKER ATTENUATION : The speaker attenuation trimmer allows automatic dimming of the speaker if one switches on the Mic. (TALK).
Applications : * Prevention of unit feedback if sidetone rejection is not sufficient. * Prevention of system feedback (This mic. signal to the speaker of another station, into the mic. of that station back to the speaker of this station, into this mic. ... etc.).
Procedure : Switch TALK functions off. Inject an audio signal into (one of the) intercom channel(s) (e.g. speak into the mic. of another station). Turn up volume. Activate TALK function and adjust the amount of attenuation (turn anti-clockwise to dim).

13 LINE connectors (A thru F)
These twelve XLR-3 connectors are for connecting the PS 630 to the intercom party lines. Each channel has an XLR-3 female connector (input) and an XLR-3 male connector (link).

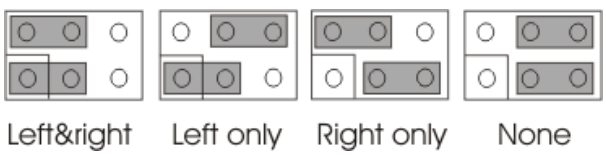
14 PROGRAM AUDIO INPUT connector
This input is electronically balanced and accepts line level audio signals.
In case of binaural use of the PS 630, internal jumpers (see #18) determine the routing of the PGM signal to the headset.

15 DIRECT MIC OUT connector
This connector outputs the pre-amplified microphone signal, electronically balanced.

5.0 INTERNAL CONTROLS



16 BINAURAL ROUTING jumpers
In case of binaural use of the PS 630, these jumpers determine – for each channel separately - the routing of the intercom audio to the headset.



17 CALL RECEIVE jumpers

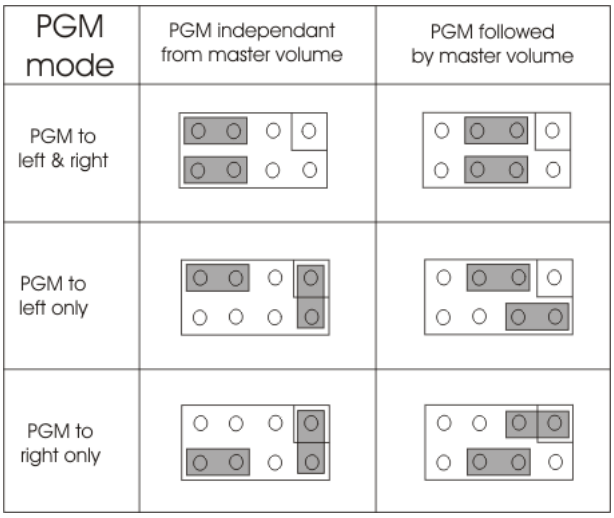
For each channel separately, these jumpers enable or disable the reception of a CALL signal when the channel is switched off.

Call receive enabled when channel off

Call receive disabled when channel off

18 PGM ROUTING jumpers

With these two jumpers one determines whether the PGM (program audio) listen level is also controlled by the Master Volume knob (see #4) and – in case of binaural use of the PS 630 - the routing of the PGM signal to the headset.


PGM mode
PGM independant from master volume
PGM followed by master volume
PGM to left & right
PGM to left only
PGM to right only

19 HEADSET MIC GAIN

To adjust the gain of the headset microphone.

20 GOOSENECK MIC GAIN

To adjust the gain of the gooseneck microphone.

6.0 TECHNICAL SPECIFICATIONS PS 630

System
dynamic range: 80 dB
frequency response: 200 Hz - 15 kHz (-3 dB)
call send signal: +2.8 mA
call signal threshold (receive): +2.4 V DC
operation voltage: 24 - 30 V DC
power interrupt time (mic mute): 0.1 sec

Intercom Line
impedance: 350 Ω (1kHz), 2.2 kΩ (DC)
audio level: nom. -18 dBu, max. 0 dBu

Mic. Pre-amps
gain: 40 - 60 dB (adjustable internally)
presence filter: +6 dB at 5 kHz
power to electret mic: +9 V DC

Headphones Driver Amps
max. output level:
monaural: 16 Vrms @ 200 Ω
binaural: 2x 10.3 Vrms @ 400 Ω
max. output power:
monaural: 1.3 Wrms @ 200 Ω
binaural: 2x 0.27 Wrms @ 400 Ω

Side Tone
Rejection: 0 - 30dB adjustable

Buzzer max. SPL: 85 dBA

Speaker Driver Amp
max. output power: 1.6 Wrms @ 16 Ω

Program Audio Input
input impedance: 28 kΩ (balanced)
nominal input level: 0 dBU
max. input level: +15 dBu

Direct Mic Output
output impedance: 50 Ω (balanced)
nominal Output Level: + 6 dBu
max. Output Level: +21 dBu

Power Consumption PS 630
current (at 30 V DC):
105 mA quiescent, 140 mA signaling
280 mA at max. output + signaling

Dimensions & Weight PS 630
width: 337mm / height: 87 mm
depth: 155 mm / weight: 2940 grams

0 dBu is defined as 775 mV into open circuit
ASL reserves the right to alter specifications without prior notice

7.0 PARTY LINE, TECHNICAL CONCEPT

User stations in an ASL intercom system are connected via one or several 'party lines'. A party line offers two way ('full duplex') communication and consists of standard microphone (multi-pair) cable. One wire is used as an audio line, one as a power line and the screen of the cable functions as earth/return.

Current drive is used for signal transfer. Each station utilizes a current amplifier to amplify the microphone signal and place it on the common audio line where, due to the constant line impedance (situated in the power supply between XLR pin 3 and 1), a signal voltage is developed which can be further amplified and sent to the headphones or loudspeakers.

This principle has three advantages:

- the use of a single audio line allows several stations to talk and listen simultaneously
- due to the high bridging impedance offered by each station, the number of stations on the party line has no influence on the level of the communications signal
- power and audio to the intercom stations use the same cable

The Call signal is also sent as a current on the audio line. It develops a DC potential over the line impedance which will be sensed by each station and interpreted as a Call signal.

8.0 CABLING

The intercom lines (the 'party lines') are of the shielded two-conductor microphone cable type. The intercom line connectors are of the XLR-3 type. Audio and Call signals are on pin 3, DC power is on pin 2 and pin 1 is connected to the shield of the cable which functions as the common return for audio and power.

The audio signal is transferred in an unbalanced way (see 'Party Line, Technical Concept').
To avoid earth loops (hum), the possible effect of electromagnetic fields and to minimize power loss, certain rules have to be obeyed when installing the cabling of an intercom system :

Use high quality cable
Use high quality microphone cable (shielded two conductor cable, minimum 2x 0.30 mm2).
In case multi-pair microphone cable is used, it should be of high quality and each pair should consist of two conductors (minimum 2x 0.15 mm2) with separate shield and an overall shield.

Use flexible cable
Use flexible single and multi-pair microphone cable instead of cable with solid cores, especially when the cable is subjected to bending during operation or installation.

Cable screens to XLR pin 1
The screen of each separate microphone cable and/or the screen of each single pair in a multi-pair cable, should be connected to pin 1 of each XLR-3 connector. Do not connect these screens to the metal housing of ASL unitst or XLR-3 wall boxes. See section ‘Earthing Concept’.

Connect metal cable trunks, wall boxes and overall multi-pair cable screens to clean earth
Metal cable trunks, metal wall boxes and overall multi-pair cable screens should be interconnected and, at the 'central earth point' in the intercom network only, be connected to a clean earth or a safety earth. (see section ‘Earthing Concept’).

Keep metal connection boxes and cable trunks or pipes isolated from other metal parts
Metal trunks or pipes for intercom cables and metal connection boxes should be mounted in such a way that they are isolated from any other metal housing or construction part.

Keep cables parallel as much as possible
When two (multi channel) units in a network are connected by more than one cable, make sure that these cables are parallel to each other over the whole distance between those units. When using multi-pair cable, parallelism is ensured in the best possible way.

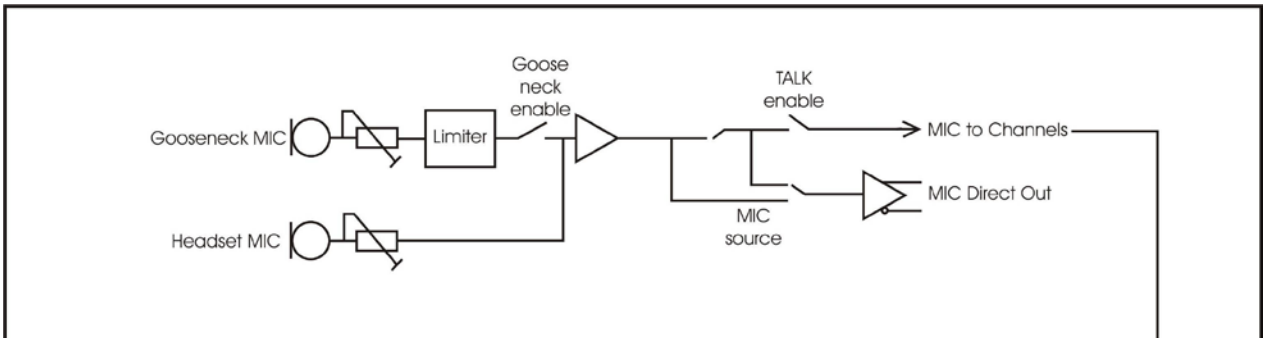
Avoid closed loops
Always avoid that intercom cables are making a closed loop. So-called 'ring intercom' should not physically be cabled as a ring

Keep cables away from electromagnetic sources
Keep intercom cables away from high energy cables, e.g. 115/230/400V mains power or dimmer controlled feeds for spotlights. Intercom cables should cross high energy cables at an angle of 90º only. Intercom cables should never be in the same trunks as energy cables.

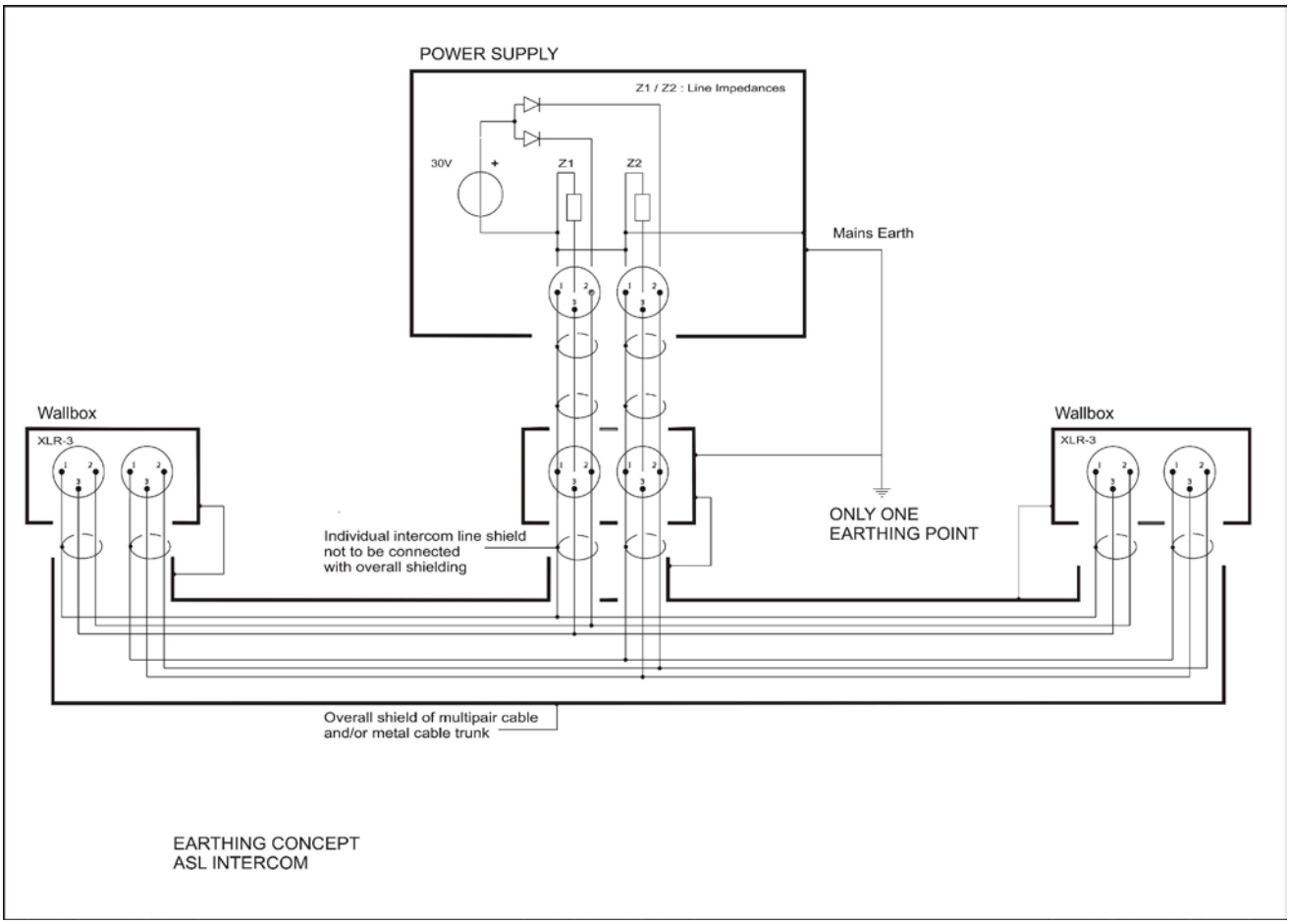
Place power supply in a central position
In case of a system powered by a separate power supply: In order to diminish power losses, place the power supply as close as possible to where most power consumption occurs, in other words most user stations are placed.

ASL powered units to a 'clean' mains outlet
Master stations or power supplies should be connected to a mains outlet with a clean earth. Other audio equipment may be connected to this mains outlet, but avoid using an outlet which also powers dimmer controlled lighting systems.

9.0 PS 630 BLOCK DIAGRAM



10.0 EARTHING CONCEPT



11.0 SYSTEM CONFIGURATION